

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE
BOARD OF PATENT APPEALS AND INTERFERENCES**

APPLICANT(S): Terence Edwin DODGSON et al.

GROUP ART UNIT: 2611

APPLICATION NO.: 10/648,560

EXAMINER: Dac V. HA

FILING DATE: August 25, 2003

DATED: January 9, 2008

FOR: INTEGRATED MODULATORS AND DEMODULATORS

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPELLANTS' BRIEF ON APPEAL

REAL PARTY IN INTEREST

The real party in interest is Samsung Electronics Co., Ltd., the assignee of the subject application, having an office at 416, Maetan-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea.

RELATED APPEALS AND INTERFERENCES

To the best of Appellants' knowledge and belief, there are no currently pending related appeals, interferences or judicial proceedings.

STATUS OF CLAIMS

The original application filed on August 25, 2003 contained Claims 1-18. In a Response filed April 10, 2007, Claims 1, 17 and 18 were amended. Thus, Claims 1-18 are pending in the Appeal. Claims 1, 17 and 18 are in independent form.

STATUS OF AMENDMENTS

To date, all of the amendments to the claims have been entered. Thus, the Appendix to this Appeal Brief includes Claims 1-18, of which the status of Claims 1, 17 and 18 are indicated as “Previously Presented,” the status of Claims 2-16 are indicated as “Original.”

SUMMARY OF CLAIMED SUBJECT MATTER

The invention, as recited in Claim 1, relates to a modulating device for modulating and demodulating data for transmission from a first device to a second device. The modulating device comprises a modulating means capable of modulating and demodulating the data according to at least a first and second modulation technique using common digital modulation components. The modulating device also comprises a switching means for automatically switching between at least the first and the second modulation techniques. (Specification, page 17, lines 5-9, page 21, lines 14-19, and page 24, lines 1-13, and FIGS. 16 and 17)¹.

The invention, as recited in Claim 3, relates to the device of Claim 1, further comprising a plurality of building blocks, wherein at least one of the building blocks is used for at least one of modulating and demodulating data according to the at least first and second modulation techniques. The at least one building block comprises a programmable finite impulse response filter, a look-up table, and a serial-to-parallel converter. (Specification, page 17, lines 23-30, page 18, lines 22-25, page 22, lines 5-31, FIG. 16, 510 and 520, and FIG. 17, 610).

¹ Although a citation for each feature of the claims is provided herein, Appellants note that support may be found elsewhere in the written description.

The invention, as recited in Claim 4, relates to the device of Claim 3, wherein the programmable finite impulse response filter is programmable to a first and a second mode for the first and second modulation techniques, respectively. (Specification, page 22, lines 5-31, and FIG. 17, 610).

The invention as recited in Claim 17 relates to an electronic device for communicating data to and receiving data from a second electronic device. The device comprises modulating means capable of modulating and demodulating the data according to at least a first and a second modulation technique using common digital modulation components. The device also comprises a switching means for automatically switching between at least the first and the second modulation techniques. (Specification, page 17, lines 5-9, page 21, lines 14-19, and page 24, lines 1-13, and FIGS. 16 and 17).

The invention as recited in Claim 18 relates to a method for modulating data for transmission from a first device to a second device and demodulating modulated data suitable for a first modulation technique such that the data is modulated and demodulated according to at least a first and a second modulation technique. The method comprises providing a common digital modulation component used in both techniques, and providing a switching means for automatically switching between at least the first and the second modulation techniques. (Specification, page 17, lines 5-9, page 21, lines 14-19, and page 24, lines 1-13, and FIGS. 16 and 17).

GROUND FOR REJECTION TO BE REVIEWED ON APPEAL

Whether Claims 1, 2, 17 and 18 are anticipated under 35 U.S.C. §102(b) by U.S. Patent No. 5,982,819 to *Womack et al.* (hereinafter, *Womack*).

Whether Claims 3-16 are unpatentable under 35 U.S.C. §103(a) over *Womack* in view of *Admitted Prior Art* (hereinafter, *APA*).

ARGUMENT

The Examiner rejected Claims 1, 2, 17 and 18 under 35 U.S.C. §102(b) as being anticipated by *Womack*, and Claims 3-16 under 35 U.S.C. §103(a) as being unpatentable over *Womack* in view of *APA*.

I. Claims 1, 2, 17 and 18 are patentable over *Womack*

A. Claim 1

Claim 1 recites a modulating device for modulating and demodulating data for transmission from a first device to a second device. The modulating device comprises a modulating means capable of modulating and demodulating the data according to at least a first and second modulation technique using common digital modulation components. The modulating device also comprises a switching means for automatically switching between at least the first and the second modulation techniques.

Womack essentially describes a messaging receiver and corresponding system and method adaptable to a plurality of modulation formats. A system controller controls a plurality of transmitters that transmit a forward channel signal corresponding to a message in a modulation format suitable for reception by a Personal Messaging Unit (PMU). Messaging receivers include flexible resources and receive a message indicative of a modulation format. The flexible resources are configured in accordance with this modulation format, and the messaging receiver receives a reverse channel signal from the PMU for demodulation before providing the reverse channel signal to the system controller.²

Regarding Claim 1, in the final Office Action the Examiner maintained the contention that the *Womack* teaches each and every element of Claim 1.³ To support this contention, the Examiner cites portions of *Womack* describing the messaging receiver and a corresponding system and method adaptable to a plurality of modulation formats.⁴ The Examiner further cites portions of *Womack* describing that the channels may employ multiple modulation formats and that the PMU is

² See *Womack* at column 2, line 63 through column 3, line 16.

³ See Office Action dated July 11, 2007, at page 2.

preferably arranged and constructed to receive a common modulation format.⁵ The Examiner further contends that a switching means is inherent.⁶ However, after reviewing *Womack*, Appellants respectfully disagree, and assert that *Womack* fails to teach or suggest the elements of Claim 1.

Nothing in *Womack*, as a whole or in part, fairly teaches or suggests that the messaging receiver is capable of both modulating and demodulating data. The messaging receiver of *Womack* is notified of a modulation technique and allocates its flexible resources to receive and demodulate the reverse channel response of the PMUs.⁷ The messaging receiver of *Womack* is not responsible for transmission of messages to the PMUs, thus there is no need for the modulation of the messages, and instead only demodulation takes place at the messaging receiver.

While *Womack* discloses that the messaging receiver may be customized to specific modulation techniques, the use of these techniques is for demodulation only. Thus, *Womack* fails to disclose a modulating device having a modulating means capable of modulating and demodulating according to at least a first and a second modulation technique, as recited in Claim 1.

As admitted by the Examiner, *Womack* fails to describe a switching means for automatically switching between at least the first and the second modulation techniques. The Examiner contends that this limitation is inherent, but provides no support for such a contention. In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.⁸ The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.⁹

Womack describes that a messaging receiver is capable of employing multiple modulation techniques upon reception of a modulation indicator, but fails to disclose that the receiver is capable of switching from a first modulation technique to a second modulation technique. Because there is no disclosure of the switching from a first modulation technique to a second modulation technique, there is no necessary need for a switching means in the messaging receiver. Further, there is no

⁴ See *Womack* at Abstract

⁵ See *Womack* at column 2, lines 30-40.

⁶ See Office Action date July 11, 2007, at page 2.

⁷ See *Womack* at column 7, lines 9-28.

⁸ See *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990).

indication of an automatic switching from a first modulation technique to a second modulation technique. Inherency may not be established by probabilities or possibilities. The Examiner fails to provide any extrinsic evidence that makes clear that the switching means is necessarily present in the messaging receiver of *Womack*, and that it would be so recognized by persons of ordinary skill.

In the latest Advisory Action, in attempting to provide support for the argument that *Womack* teaches or suggests all of the elements of Claim 1, the Examiner contends that *Womack* discloses a system that is capable of employing multiple modulation and demodulation formats.¹⁰ While the system may employ multiple modulation and demodulation formats, the messaging receiver of *Womack* only operates to demodulate messages.

The Examiner further contends that the configuration of flexible resources in accordance with a determined modulation format, implies that there must be some mechanism for switching the modulation format.¹¹ However, the Examiner fails to realize that the configuration of flexible resources only implies the ability to establish a modulation format and does not imply the switching of one modulation format to another modulation format.

Accordingly, *Womack* fails teach or suggest each and every element of Claim 1, and the elements of Claim 1 are not anticipated by *Womack*. Therefore, it is respectfully submitted that Claim 1 is believed to be allowable over *Womack*.

B. Claim 2

Regarding the rejection of Claim 2, the Examiner maintained the rejection under 35 U.S.C. §102(e). Claim 2 are patentable at least by virtue of its dependency from independent Claim 1. The patentability of Claim 1 is described above. Claim 2 also recites patentable subject matter in its own right. Accordingly, it is respectfully submitted that because the above arguments place the independent claim in condition for allowance, this dependent claim is also believed to be in condition for allowance.

⁹ See *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981)

¹⁰ See Advisory Action dated October 10, 2007 at page 2.

¹¹ See Advisory Action dated October 10, 2007 at page 2.

C. Claim 17

Claim 17 recites an electronic device for communicating data to and receiving data from a second electronic device. The device comprises modulating means capable of modulating and demodulating the data according to at least a first and a second modulation technique using common digital modulation components. The device also comprises a switching means for automatically switching between at least the first and the second modulation techniques.

Appellants assert that Claim 17 is patentable for at least the reasons presented above with regard to Claim 1. More specifically, Claim 17 recites the modulating means capable of modulating and demodulating data according to at least a first and a second modulation technique, and a switching means for automatically switching between at least the first and the second modulation techniques. As described above with regard to Claim 1, *Womack* fails to teach or suggest a modulating means capable of modulating and demodulating, as well as a switching means for switching between modulation techniques. Accordingly, *Womack* fails to teach or suggest each and every element of Claim 17, and the elements of Claim 17 are not anticipated by *Womack*. Therefore, it is respectfully submitted that Claim 17 is believed to be allowable over *Womack*.

D. Claim 18

Claim 18 recites a method for modulating data for transmission from a first device to a second device and demodulating modulated data suitable for a first modulation technique such that the data is modulated and demodulated according to at least a first and a second modulation technique. The method comprises providing a common digital modulation component used in both techniques, and providing a switching means for automatically switching between at least the first and the second modulation techniques.

Appellants assert that Claim 18 is patentable for at least the reasons presented above with regard to Claim 1. More specifically, Claim 18 recites that data is modulated and demodulated according to at least a first and a second modulation technique, and further recites a switching means for automatically switching between at least the first and the second modulation techniques. As described above with regard to Claim 1, *Womack* fails to teach or suggest a modulating means capable of modulating and demodulating, as well as a switching means for switching between

modulation techniques. Accordingly, *Womack* fails to teach or suggest each and every element of Claim 18, and the elements of Claim 18 are not anticipated by *Womack*. Therefore, it is respectfully submitted that Claim 18 is believed to be allowable over *Womack*.

II. Claims 3-16 are patentable over the combination of *Womack* and *APA*

A. Claim 3

Claim 3 recites the device of Claim 1, further comprising a plurality of building blocks, wherein at least one of the building blocks is used for at least one of modulating and demodulating data according to the at least first and second modulation techniques. The at least one building block comprises a programmable finite impulse response filter, a look-up table, and a serial-to-parallel converter.

In the final Office Action the Examiner maintained the contention that the combination of *Womack* and *APA* teaches, suggests or renders obvious every element of Claim 3. More specifically, the Examiner contends that *Womack* teaches each element of Claim 3 except a serial-to-power converter. The Examiner cites *APA* in an effort to remedy this deficiency. Claim 3 is patentable at least by virtue of its dependency from independent Claim 1. The patentability of Claim 1 is described above.

Claim 3 also recites patentable subject matter in its own right. The Examiner contends that it would have been obvious to one skilled in the art at the time of the invention to easily utilize a serial-to-power converter, as disclosed in *APA*, into *Womack* when there is a need to accommodate such a modulation signal.¹² However, this contention represents a conclusory statement without any articulated reasoning or rational underpinning to support the legal question of obviousness.

Appellants agree that *Womack* fails to teach or suggest a serial-to-power converter. A serial-to-power converter is utilized in a conventional modulator.¹³ As described above with regard to Claim 1, *Womack* describes a messaging receiver that only demodulates. Thus, there is no teaching, suggestion or motivation to combine the serial-to-power converter of *APA* with the messaging

¹² See Office Action dated July 11, 2007 at page 3.

¹³ See Specification at page 10, lines 3-8.

receiver of *Womack*. Because it is also not clear how one would combine the serial-to-power converter of *APA* with the messaging receiver of *Womack*, there is no reasonable expectation of success in combining the teachings of *Womack* and *APA*. Therefore, it is respectfully submitted that Claim 3 is believed to be allowable over the combination of *Womack* and *APA*.

B. Claim 4

Claim 4 recites the device of Claim 3, wherein the programmable finite impulse response filter is programmable to a first and a second mode for the first and second modulation techniques, respectively.

In the final Office Action the Examiner maintained the contention that the combination of *Womack* and *APA* teaches, suggests or renders obvious every element of Claim 4. Claim 4 is patentable at least by virtue of its dependency from independent Claim 1. The patentability of Claims 1 is described above.

Claim 4 also recites patentable subject matter in its own right. The Examiner contends that *Womack* discloses that in a first mode a finite impulse response filter is used and in a second mode the finite impulse response filter is not used.¹⁴ However, *Womack* actually describes that for demodulation of frequency shift keyed signals, a decision between low speed data rates is made with the aid of the finite impulse response filter. *Womack* provides no disclosure relating to the use of finite impulse response filter in a first mode and its non-use in a second mode. Further *Womack* fails to disclose that the finite impulse response filter is programmable to a first and a second mode for first and second modulation techniques. *APA* fails to remedy this deficiency of *Womack*. Therefore, it is respectfully submitted that Claim 4 is believed to be allowable over the combination of *Womack* and *APA*.

C. Claims 5-16

Regarding the rejection of Claims 5-16, the Examiner maintained the rejection under 35 U.S.C. §103(a). Claims 5-16 are patentable at least by virtue of their dependency from independent Claim 1. The patentability of Claim 1 is described above. Claims 5-16 also recite patentable subject

¹⁴ See Office Action dated July 11, 2007 at page 4.

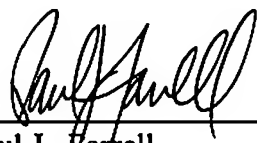
matter in their own right, and the Examiner has failed to provide clear and detailed rejections with regard to Claims 5-16. More specifically, the Examiner has failed to designate a particular part of the reference that is relied upon, and has failed to clearly explain the pertinence of each reference for each rejected claim. Accordingly, it is respectfully submitted that because the above arguments place the independent claim in condition for allowance, that these dependent claims are also believed to be in condition for allowance.

CONCLUSION

As the Examiner has failed to make out a prima facie case for anticipation and obviousness rejections, the rejections of Claims 1-18 must be reversed.

Independent Claims 1, 17 and 18 are not rendered unpatentable by *Womack*. Therefore, the rejection of Claims 1-18 must be reversed.

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CLAIMS APPENDIX

1. (Previously Presented) A modulating device for modulating and demodulating data for transmission from a first device to a second device, comprising modulating means capable of modulating and demodulating the data according to at least a first and a second modulation technique using common digital modulation components, and a switching means for automatically switching between at least the first and the second modulation techniques.

2. (Original) The device according to claim 1, further comprising a plurality of building blocks, wherein at least one of said building blocks is used for at least one of modulating and demodulating data according to said at least first and second modulation techniques.

3. (Original) The device according to claim 2, wherein said at least one building block comprises:

- a programmable finite impulse response filter;
- a look-up table; and
- a serial-to-parallel converter.

4. (Original) The device according to claim 3, wherein said programmable finite impulse response filter is programmable to a first and a second mode for said first and second modulation techniques, respectively.

5. (Original) The device according to claim 4, wherein said programmable finite impulse response filter is used as a correlator in the first mode.

6. (Original) The device according to claim 4, wherein said programmable finite impulse response filter is used as matched filters in the second mode.

7. (Original) The device according to claim 3, wherein said programmable finite

impulse response filter is adaptable by varying its weights.

8. (Original) The device according to claim 4, wherein said look-up table includes data related to said first and second modulation techniques.

9. (Original) The device according to claim 8, wherein said look-up table comprises n input words, m output words relating to said first modulation technique, and p output words relating to said second modulation technique, wherein $n \geq m$ and $n \geq p$.

10. (Original) The device according to claim 9, wherein $n > p$ and wherein only p input words are used for determining output words related to said second modulation technique.

11. (Original) The device according to claim 2, further comprising timing means adjustable to a first clocking time used for modulating and demodulating data according to said first modulation technique and a second clocking time used for modulating and demodulating data according to said second modulation technique.

12. (Original) The device according to claim 11, wherein said timing means comprises a serial-to-parallel converter.

13. (Original) The device according to claim 4, wherein said modulating means automatically switches between said first and second modes.

14. (Original) The device according to claim 1, wherein said first and second modulation techniques are Complementary Code Keying (CCK) with Differential Quadrature Phase Shift Keying (DQPSK) (CCK+DQPSK) and Gaussian Frequency Shift Keying (GFSK) modulation techniques.

15. (Original) The device according to claim 1, wherein said first and second modulation

techniques are Quadrature Phase Shift Keying (QPSK) and Gaussian Frequency Shift Keying (GFSK) modulation techniques.

16. (Original) The device according to claim 1, wherein said first and second modulation techniques are a frequency modulation technique and a quadrature modulation technique.

17. (Previously Presented) An electronic device for communicating data to and receiving data from a second electronic device, the device comprising modulating means capable of modulating and demodulating the data according to at least a first and a second modulation technique using common digital modulation components, and a switching means for automatically switching between at least the first and the second modulation techniques.

18. (Previously Presented) A method for modulating data for transmission from a first device to a second device and demodulating modulated data suitable for a first modulation technique such that the data is modulated and demodulated according to at least a first and a second modulation technique, the method comprising providing a common digital modulation component used in both techniques, and providing a switching means for automatically switching between at least the first and the second modulation techniques.

EVIDENCE APPENDIX

There is no evidence submitted pursuant to 37 C.F.R. 1.130, 1.131, 1.132 or entered by the Examiner and relied upon by Appellants.

RELATED PROCEEDINGS APPENDIX

There are no known decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 C.F.R. 41.37.